

GENERAL LECTURE

“Porous Solids: A New World”

Thursday, April 3

7:30 p.m., PS H-150

Porous solids are now strategic multifunctional materials. This lecture presents the global strategy for their genesis including structural chemistry, mechanisms of formation by using *in situ* methods, computer prediction of crystal structures, correlation of classical properties of zeolites (catalysis, gas separation and storage...) with those of dense solids (magnetism, conductivity, optical properties...). Emphasis will be placed on solids with very large pores for which there are unprecedented applications, particularly concerning the current societal problems in energy, health and nanosciences.

TECHNICAL PRESENTATION

“The Breathing Effects in MOFs”

Friday, April 4

3:00 p.m., PS H-150

Nanocrystals with tightly controlled size distributions and well-defined shapes (spheres, disks, rods) can now be readily prepared. These can, in turn, be transformed chemically from one material to another, which is the subject of this talk. Chemical reactions in nanocrystals can proceed by simplified kinetics compared to bulk solids. Further, the products can be spatially complex arrangements of connected materials. In this sense, the nanocrystal can be an important model system for understanding chemical reactions in the solid state more generally. Examples covered will be the formation of hollow nanocrystals through the nanoscale Kirkendall effect, cation exchange reactions in nanocrystals, and nanocrystal splitting reactions.

Eyring Lecturer

April 3 and 4, 2008

G rard F rey
Member of the French
Academy of Sciences
Professor of Materials Science
Institut Lavoisier
Versailles University
France



G rard F rey received his Ph.D. at the University of Caen in 1968 and his Doctorat d'Etat at the University of Le Mans in 1977. His thesis work, supervised by R. De Pape, was devoted to the structures and magnetism of 3d transition metal fluorides. Appointed Assistant Professor and then Professor (1981) at Le Mans University, he developed the concept of ordered magnetic frustration in crystallized and amorphous fluorides. Between 1988 and 1992 he was the deputy director of the Chemistry Department of CNRS in Paris.

Back to Le Mans (1992), he changed his orientation toward porous solids. In 1996, he was asked by CNRS to create the Institut Lavoisier for carrying out materials research at the new University of Versailles, where he is now. He was appointed chair of physical chemistry of porous solids at the Institut Universitaire de France in 1999. Professor G rard F rey has always been a solid state scientist, interested in chemistry, crystallography and physics for over 40 years. His work has resulted in over 450 publications. Professor F rey's research has ranged widely, including such topics as hydroxysalts, crystalline and amorphous transition metal fluorides, ordered magnetic frustration in triangular antiferromagnets and structure of copper-based minerals (phosphates, vanadates...). In the last 16 years he has focused on new methods of formation of crystalline micro- and mesoporous solids (inorganic and organic/inorganic hybrid) for energy, anti-pollution and health applications. One of his papers in *Science* was named the 'hottest' paper in chemistry in 2007, according to *ScienceWatch*. He is the president of the French National Council of Chemistry and president-elect of the French Society of Chemistry. Member of several academies, he received many awards which include the Grand Prix of the French Academy of Sciences and named an Alexander von Humboldt Fellow.

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**EYRING LECTURES IN CHEMISTRY
AND BIOCHEMISTRY**

The Department of Chemistry and Biochemistry at Arizona State University is pleased to announce the Eyring Lectures in Chemistry and Biochemistry for Spring 2008. This interdisciplinary distinguished lecturer series is dedicated to stimulating discussions by renowned scientists who are at the cutting edge of their respective fields. Each lecture series consists of a lead-off presentation to help communicate the excitement and challenge of this central science to the University and community, followed by a more specialized colloquium to help bring the audience to the scientific frontiers of the topics under discussion. Speakers will be scholars in residence in the Department during their lecture series and will be available for informal discussions with faculty, students, and other interested individuals.

The Eyring Lectures in Chemistry and Biochemistry bears the name of LeRoy Eyring, Regents' Professor of Chemistry, whose extraordinary instructional and research accomplishments and professional leadership at Arizona State University helped to bring the Department of Chemistry and Biochemistry into international prominence.

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LECTURES
IN
CHEMISTRY
AND
BIOCHEMISTRY**

Spring 2008